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CESARI AND MCKENNA, LLP
88 BLACK FALCON AVENUE
BOSTON, MA 02210

EXAMINER	
LEE, ANDREW CHUNG CHEUNG	
ART UNIT	**PAPER NUMBER**
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

sK

Office Action Summary	Application No. 09/964,702	Applicant(s) DESANTI ET AL.
	Examiner Andrew C. Lee	Art Unit 2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-32* is/are rejected.

7)☒ Claim(s) *10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 14, 30, 32, 3, 4, 15, 22, 27, 5, 16, 28, 6, 11 – 14, 17, 23, 24, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varghese et at. (U.S. 6560236 B1) in view of Delaney et al. (US 6937574 B1).

Regarding Claims 1, 14, 30, 32, Varghese et at. disclose a method for use by an intermediate network device (Fig. 2, element 112, element 110) having a plurality of interfaces (Fig. 2, ports 8, 12, 9, 15, 17, 6, 23, 19) for forwarding network packets among the interfaces, one or more of the interfaces being associated with one or more Virtual Local Area Network (VLAN) designations (Fig. 2, Vlan 1, Vlan 2), the method comprising the steps of: mapping each VLAN designation to a site identifier (Fig. 3 (step 130), col 4, line 59 to col 5, line 6; VLAN 1 is the VLAN designation mapped into site identifier Vianld: 1); Varghese et at. Implicitly teach receiving on an inbound interface a packet having a site-local unicast destination address (col 3, lines 3 - 9; The receipt of unicast packet with a destination address is . equivalent to receiving on an inbound interface a packet having a site-local unicast destination address); identifying the VLAN designation associated with the received packet (Fig. 3 (steps 130, 132, 134 136), col 4 line 65 to col 5 line 36; The steps 130 -136 create a correspondence to links 6, 17, 19, 23 with Vlan 1 and these steps are

associated with identifying the VLAN designation associated with the received packet); utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped (Fig. 3 (step 130), col 4, line 59 to col 5, line 6; VLAN 1 is the VLAN designation mapped into site identifier VlanId: 1. Utilizing the mapping of VLAN designation (VLAN 1) to site identifier VlanId: 1 in step 130, the identified VLAN designation to retrieve the site identifier is performed); creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address (col 5, line 58 to col 6, line 23. The VlanId is embedded in a packet by encoding VlanId field in some redundant field in P (data packet) that contains redundant information without the addition of headers to the original packet is equivalent to creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address); and rendering a forwarding decision for the received packet based on the modified destination address (col 3, lines 2 - 9). Varghese et at. do not disclose explicitly receiving on an inbound interface a packet having a site-local unicast destination address; identifying the VLAN designation associated with the received packet; utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped; creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address; and rendering a forwarding decision for the received packet based on the modified destination address. Delaney et al. disclose the limitation of mapping each VLAN designation to a site identifier ("DAAT maps MAC addresses of elements of the customer LANs in DA" as mapping each VLAN designation to a site identifier; column 7, lines 10 –

20, column 8, lines 3 – 12); receiving on an inbound interface a packet having a site-local unicast destination address (column 7, lines 42 – 46); identifying the VLAN designation associated with the received packet ("EDD seaches its DAAT for the DA of the received frame" as identifying the VLAN designation associated with the received packet; column 7, lines 48 – 56); utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped (column 7, lines 50 – 56); creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address ("the frame is encapsulated by adding an additional header" as creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address; column 7, lines 60 – 63); and rendering a forwarding decision for the received packet based on the modified destination address (column 7, lines 64 – 66, column 8, lines 1 – 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Varghese et at. to include receiving on an inbound interface a packet having a site-local unicast destination address; identifying the VLAN designation associated with the received packet; utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped; creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address; and rendering a forwarding decision for the received packet based on the modified destination address such as that taught by Delaney et al. in order to provide methods and apparatus that enables a NSP to provide a very large number of VLANs on shared network facilities (as suggested by Delaney et al., see column 1, lines 54 – 56).

Regarding Claim 3, Varghese et al. discloses wherein the step of rendering a forwarding decision comprises the step of deciding upon an outbound interface from which the packet is to be forwarded (column 3, lines 2 – 9). Delaney et al. also disclose the limitation of a method of claimed wherein the step of rendering a forwarding decision comprises the step of deciding upon an outbound interface from which the packet is to be forwarded (column 8, lines 1 – 2).

Regarding claims 4, 15, 22, 27, Varghese et at. disclose a method for use by an intermediate network device (Fig. 2, element 112, element 110) having a plurality of interfaces (Fig. 2, ports 8, 12, 9, 15, 17, 6, 23, 19) for forwarding network packets among the interfaces. Varghese et at. do not disclose explicitly method of claimed wherein the packet further includes a site-local unicast source address ("source address" as site-local unicast source address; column 8, lines 33 – 41), the method further comprising the steps of: identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded or the VLAN designation with which the packet is to be tagged; utilizing the identified VLAN designation for the outbound interface to retrieve the site identifier to which the VLAN designation is mapped ; and comparing the site identifier associated with the inbound interface with the site identifier associated with the outbound interface. Delaney et al. disclose the limitation of a method of claimed wherein the packet further includes a site-local unicast source address ("source address" as site-local unicast source address; column 8, lines 33 – 41), the method further comprising the steps of: identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded or the VLAN designation with which

the packet is to be tagged ("the frame with an encapsulation, VLAN tag" as identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded or the VLAN designation with which the packet is to be tagged; column 7, lines 1 – 4; column 8, lines 40 – 45); utilizing the identified VLAN designation for the outbound interface to retrieve the site identifier to which the VLAN designation is mapped (column 7, lines 50 – 56); and comparing the site identifier associated with the inbound interface with the site identifier associated with the outbound interface (column 8, lines 33 – 45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Varghese et at. to include explicitly method of claimed wherein the packet further includes a site-local unicast source address ("source address" as site-local unicast source address; column 8, lines 33 – 41), the method further comprising the steps of: identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded or the VLAN designation with which the packet is to be tagged; utilizing the identified VLAN designation for the outbound interface to retrieve the site identifier to which the VLAN designation is mapped ; and comparing the site identifier associated with the inbound interface with the site identifier associated with the outbound interface such as that taught by Delaney et al. in order to provide methods and apparatus that enables a NSP to provide a very large number of VLANs on shared network facilities (as suggested by Delaney et al., see column 1, lines 54 – 56).

Regarding claims 5, 16, 28, Varghese et at. disclose a method for use by an intermediate network device (Fig. 2, element 112, element 110) having a plurality of

interfaces (Fig. 2, ports 8, 12, 9, 15, 17, 6, 23, 19) for forwarding network packets among the interfaces. Varghese et at. do not disclose explicitly a method of claimed further comprising the steps of: if, as a result of the comparing step, the two site identifiers match, forwarding the packet on the outbound interface; and if, as a result of the comparing step, the two site identifiers do not match, dropping the packet without forwarding. Delaney et al. disclose the limitation of a method of claimed further comprising the steps of: if, as a result of the comparing step, the two site identifiers match, forwarding the packet on the outbound interface (column 9, lines 41 – 47); and if, as a result of the comparing step, the two site identifiers do not match, dropping the packet without forwarding (column 9, lines 48 – 51). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Varghese et at. to include a method of claimed further comprising the steps of: if, as a result of the comparing step, the two site identifiers match, forwarding the packet on the outbound interface; and if, as a result of the comparing step, the two site identifiers do not match, dropping the packet without forwarding such as that taught by Delaney et al. in order to provide methods and apparatus that enables a NSP to provide a very large number of VLANs on shared network facilities (as suggested by Delaney et al., see column 1, lines 54 – 56).

Regarding Claim 6, Varghese et al. discloses wherein the step of rendering comprises the step of applying the modified destination address to a forwarding information base (FIB) optimized to permit fast lookups (Fig. 4, element 146; col 8, lines 7–21). Delaney et al. also disclose the limitation of a method of claimed wherein the step

of rendering comprises the step of applying the modified destination address to a forwarding information base (FIB) optimized to permit fast lookups ("Destination Address Association Table, DAAT" as applying the modified destination address to a forwarding information base (FIB) optimized to permit fast lookups; column 7, lines 10 – 20).

Regarding Claim 11, Varghese et at. disclose whereby each VLAN designation is mapped to a single site identifier (Fig. 3 (step 130), col 4, line 59 to col 5, line 6; VLAN 1 is the VLAN designation mapped into site identifier VlanId: 1)

Regarding Claim 12, Varghese et at. disclose whereby a plurality of VLAN designations are mapped to the same site identifier (Fig. 3 (step 130 and step 136), col 4, line 59 to col 5, line 6; col 5, line 29 — 35. VLAN 1 and VLAN FOO are mapped to same VlanId: 1 (same site identifier)).

Regarding Claim 13, Varghese et al. discloses wherein packets may be one of either untagged or tagged with a VLAN designation, and the step of identifying includes either, if the received packet is untagged, determining the VLAN designation of the inbound interface on which the untagged packet was received or, if the received packet is tagged, determining the VLAN designation with which the received packet is tagged (col 7, lines 20 – 35; col 7 line 64 — col 8 line 6. Packets with VlanId field (tagged) is decoded to yield the Vlan the packet was sent on. Packets without VlanId (untagged) uses a Source Vlan Table that associates source addresses with Vlans).

Regarding Claim 14, Varghese et at. disclose a method for use by an intermediate network device (Fig. 2, element 112, element 110) having a plurality of interfaces (Fig. 2,

ports 8, 12, 9, 15, 17, 6, 23, 19) for forwarding network packets among the interfaces, one or more of the interfaces being associated with one or more Virtual Local Area Network (VLAN) designations (Fig. 2, Vlan 1, Vlan 2), the method comprising the steps of: mapping each VLAN designation to a site identifier ((Fig. 3 (step 130), cot 4, line 59 to col 5, line 6; VLAN I is the VLAN designation mapped into site identifier Vianld: 1); receiving on an inbound interface a packet having a site-local unicast destination address (cot 3, lines 3 - 9; The receipt of unicast packet with a destination address is equivalent to receiving on an inbound interface a packet having a site-local unicast destination address); identifying the VLAN designation associated with the received packet (Fig. 3 (steps 130, 132, 134 136), col 4 line 65 to col 5 line 36; The steps 130 -136 create a correspondence to links 6, 17, 19, 23 with Vlan 1 and these steps are associated with identifying the VLAN designation associated with the received packet); and utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped (Fig. 3 (step 130), col 4, line 59 to col 5, line 6; VLAN 1 is the VLAN designation mapped into site identifier Vianld: 1. Utilizing the mapping of VLAN designation (VLAN 1) to site identifier Vianld: 1 in step 130, the identified VLAN designation to retrieve the site identifier is performed).

Regarding Claim 17, Varghese et al. discloses an intermediate network device (Fig 5, elements 150 and 152) for forwarding packets within a computer network, the device comprising: a plurality of interfaces for receiving and forwarding packets, one or more of the interfaces associated with onē or more virtual local area network (VLAN) designations (Fig. 5, element VLAN 1....VLAN m, col 8, line 50 to col 9, line 12) ;

a forwarding information base (FIB) for storing routing information (Fig. 5, element 172, col 9, lines 50 – 55); a routing engine in communicating relationship with the FIB, the routing engine configured to make forwarding decisions for received packets, based at least in part on the routing information in the FIB (Fig. 5 element 166, col 9, lines 31 – 56); and a memory in communicating relationship with the routing engine, the memory configured to store the VLAN designations associated with the device's interfaces in mapping relationship with one or more site identifiers (Fig. 6 (data structures stored in memory), elements 200 and 210; col 10, line 30 to col 12, line 26), wherein the routing engine utilizes the memory to ensure that a packet having a site-local unicast source and/or destination address is only forwarded between interfaces corresponding to the same site identifier (col 2, lines 1-13. Any communications received at a first bridge port are directly sent by the bridge to another bridge port only if the other bridge port and the first bridge port are part of the same group (same VlanId equivalent to same site identifier) is associated with a packet having a site-local unicast source and/or destination address only forwarded between interfaces corresponding to the same site identifier).

Regarding Claim 23, Varghese et at. discloses wherein the plurality of interfaces are located at one or more line cards disposed at the intermediate network device (Fig. 2, ports 8, 12, 9, 15, 17, 6, 23, 19. See Abstract. The device including a bridge having a plurality of ports through which network communications pass to and from the bridge), and each line card includes a corresponding FIB and routing engine for rending for-

warding decisions (Fig. 5, elements 172 (forwarding database) and 166 (bridge forwarding equivalent to routing engine); col 9, lines 50 – 55; col 9, lines 31 – 56).

Regarding Claim 24, Varghese et at. disclose a method for use by an intermediate network device (Fig. 2, element 112, element 110) having a plurality of interfaces (Fig. 2, ports 8, 12, 9, 15, 17, 6, 23, 19) for forwarding network packets among the interfaces, one or more of the interfaces being associated with one or more Virtual Local Area Network (VLAN) designations (Fig. 2, Vlan 1, Vlan 2), the method comprising the steps of: receiving on an inbound interface a packet having a link-local unicast destination address (col 3, lines 3 – 9. The receipt of unicast packet with a destination address is equivalent to receiving on an inbound interface a packet having a link-local unicast destination address. The packet P sent to the router can have a VlanId field. See col 6, lines 61- 65 associated with a unicast packet); identifying the VLAN designation associated with the received packet (Fig. 3 (steps 130, 132, 134 136), col 4 line 65 to col 5 line 36; The steps 130 -136 create a correspondence to links 6, 17, 19, 23 with Vlan I and these steps are associated with identifying the VLAN designation associated with the received packet); creating a modified destination address by embedding the identified VLAN designation into the link-local unicast destination address (col 5, line 58 to col 6, line 23. The VlanId is embedded in a packet by encoding VlanId field in some redundant field in P (data packet) that contains redundant information without the addition of headers to the original packet is equivalent to creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address); and

rendering a forwarding decision for the received packet based on the modified destination address (col 3, lines 2 - 9).

Regarding Claim 29, Varghese et at. disclose wherein packets may be one of either untagged or tagged with a VLAN designation, and the step of identifying includes either, if the received packet is untagged, determining the VLAN designation of the inbound interface on which the untagged packet was received or, if the received packet is tagged, determining the VLAN designation with which the received packet is tagged (col 7, lines 20 – 35; col 7 line 64 – col 8 line 6. Packets with Vlanld field (tagged) is decoded to yield the Vlan the packet was sent on. Packets without Vlanld (untagged) uses a Source Vlan Table that associates source addresses with Vlans).

3. Claims 2, 31, 20, 21, 25, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varghese et al. (US 6560236) and Delaney et al. (US 6937574 B1) as applied to claims 1, 14, 3, 4, 15, 22, 27, 5, 16, 28, 6, 11 – 14, 17, 23, 24, 29 above, and further in view of Flanders et al. (US 6,172,980).

Regarding Claims 2, 31, Varghese et al. disclose all the limitations of claim 1 except for wherein the received packet complies in at least substantial part with version 6 of the Internet Protocol (IPv6). Flanders et al. discloses the received packet complies in at least substantial part with version 6 of the Internet Protocol (IPv6). A Receive Header Processor (RHP) (Fig. 2 element 46) analyzes the destination address of the received data unit, in hardware, for determining if routing or bridging is required. If routing is required, the RHP uses portions of the received data unit header as a compare value

against predefined values stored in data structures which provide a protocol ID identifying the protocol of the received data unit and serving as an index to the appropriate microcode handling routine, executed by the RHP, for the data unit. The handling routine causes the RHP to forward data unit identifying information appropriate to the identified protocol and obtained from the received data unit to further hardware-based data unit processing elements (ACA (Address Cache ASIC) (Fig. 2, element 26)). The data unit processing elements are adaptable to the received data unit cast state (e.g. unicast, multicast, broadcast), bridging and/or routing requirements, and received data unit protocol (Abstract). The RHP to ACA interface supports IPv6 as specified in the field description (Fig. 8, col 7, lines 35 - 50). At the time the invention was made it would have been obvious to a person of ordinary skill in the art to use the RHP and ACA interface as taught by Flanders et al. into the system of Varghese et at. to reflect a new layer-2 destination address, protocol ID, Address Cache lookup status, destination address masks, and other information for routing (col 1, line 65 to col 2 line 1).

Regarding Claim 20, Varghese et at. discloses all the limitations of claim 17 except wherein at least some of the packets forwarded by the device comply in at least substantial part with version 6 of the Internet Protocol (IPv6). Flanders et at. discloses the received packet complies in at least substantial part with version 6 of the Internet Protocol (IPv6). A Receive Header Processor (RHP) (Fig. 2 element 46) analyzes the destination address of the received data unit, in hardware, for determining if routing or bridging is required. If routing is required, the RHP uses portions of the received data unit header as a compare value against predefined values stored in data structures which

provide a protocol ID identifying the protocol of the received data unit and serving as an index to the appropriate microcode handling routine, executed by the RHP, for the data unit. The handling routine causes the RHP to forward data unit identifying information appropriate to the identified protocol and obtained from the received data unit to further hardware-based data unit processing elements (ACA (Address Cache ASIC) (Fig. 2, element 26)). The data unit processing elements are adaptable to the received data unit cast state (e.g. unicast, multicast, broadcast), bridging and/or routing requirements, and received data unit protocol (Abstract). The RHP to ACA interface supports IPv6 as specified in the field description (Fig. 8, col 7, lines 35 - 50). At the time the invention was made it would have been obvious to a person of ordinary skill in the art to use the RHP and ACA interface as taught by Flanders et at. into the system of Varghese et at. to reflect a new layer-2 destination address, protocol ID, Address Cache lookup status, destination address masks, and other information for routing (col 1, line 65 to col 2 line 1).

Regarding Claim 21, Varghese et al. discloses wherein the routing engine: identifies the VLAN designation associated with the received packet (Fig. 3 (steps 130, 132, 134 136), col 4 line 65 to col 5 line 36; The steps 130 -136 create a correspondence to links 6, 17, 19, 23 with Vlan 1 and these steps are associated with identifying the VLAN designation associated with the received packet), utilizes the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped (Fig. 3 (step 130), col 4, line 59 to col 5, line 6; VLAN 1 is the VLAN designation mapped into site identifier VlanId: 1. Utilizing the mapping of VLAN designation (VLAN 1) to site

identifier VlanId: 1 in step 130, the identified VLAN designation to retrieve the site identifier is performed); creates a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address (col 5, line 58 to col 6, line 23. The VlanId is embedded in a packet by encoding VianId field in some redundant field in P (data packet) that contains redundant information without the addition of headers to the original packet is equivalent to creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address), and renders a forwarding decision for the received packet based on the modified destination address (col 3, lines 2 - 9).

Regarding Claim 25, Varghese et al. discloses all the limitations of claim 24 except for wherein the received packet complies in at least substantial part with version 6 of the Internet Protocol (IPv6). Flanders et al. discloses the received packet complies in at least substantial part with version 6 of the Internet Protocol (IPv6). A Receive Header Processor (RHP) (Fig. 2 element 46) analyzes the destination address of the received data unit, in hardware, for determining if routing or bridging is required. If routing is required, the RHP uses portions of the received data unit header as a compare value against predefined values stored in data structures which provide a protocol ID identifying the protocol of the received data unit and serving as an index to the appropriate microcode handling routine, executed by the RHP, for the data unit. The handling routine causes the RHP to forward data unit identifying information appropriate to the identified protocol and obtained from the received data unit to further hardware-based data unit processing elements (ACA (Address Cache ASIC) (Fig. 2, element 26)).

The data unit processing elements are adaptable to the received data unit cast state (e.g. unicast, multicast, broadcast), bridging and/or routing requirements, and received data unit protocol (Abstract). The RHP to ACA interface supports IPv6 as specified in the field description (Fig. 8, col 7, lines 35 - 50). At the time the invention was made it would have been obvious to a person of ordinary skill in the art to use the RHP and ACA interface as taught by Flanders et al. into the system of Varghese et al. to reflect a new layer-2 destination address, protocol ID, Address Cache lookup status, destination address masks, and other information for routing (col 1, line 65 to col 2 line 1).

Regarding Claim 26, Varghese et al. discloses wherein the step of rendering a forwarding decision comprises the step of deciding upon an outbound interface from which the packet is to be forwarded (col 3, lines 2 – 9).

4. Claims 7, 8, 9, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varghese et at. (U.S. Patent No. 6,560,236) in view of Chang (U.S. Patent No. 6,728,249).

Regarding Claim 7, Varghese et al. discloses all the limitations of claim 6 except wherein the FIB includes one or more content addressable memories (CAMs) and/or ternary content addressable memories (TCAMs). Chang discloses wherein a network processor stores LEC (LAN emulation client) up-link information which facilitates mapping of MAC addresses to VCC (Virtual Channel Connection) information. This information is stored in a content addressable memory (CAM) (Fig. 2, element 58) coupled to a packet forwarding subsystem (Fig. 2, element 56 is equivalent to the FIB) within the network processor (col 3, line 65 to col 4, line 3). At the time the invention *was*

made it would *have* been *obvious to a* person *of ordinary* skill *in the art to use CAM* to store routing information as taught by Chang in the system of Varghese et at. to facilitates the cut-through forwarding process (col 6, lines 58 – 60).

Regarding Claim 8, Varghese et al. and Chang disclose all the limitations of claim 7. Furthermore, Chang discloses wherein the one or more CAMs and/or TCAMs stores addresses or address prefixes that have been modified to include site identifiers embedded therein (col 6, lines 61-63 ; col 8, lines 10 – 32. The CAM stores LEC uplink information which provides mapping of MAC destination addresses to virtual channel connections (VCCs) and vice versa. The MAC destination addresses and VCC are associated with addresses stored in the CAM. Unique MAC and VLAN ID are pre-registered into CAM during configuration. The VLAN ID (equivalent to site identifier) which is in the (embedded) packet header is use to determine LEC ID for the packet and with the VCC from the CAM is used for packet forwarding. See col 3, line 43 – 55).

Regarding Claim 9, Varghese et at. and Chang disclose all the limitations of claim 8. Furthermore, Chang discloses wherein at least one of the CAMs and/or TCAMs has a plurality of rows and each row of the CAM and/or TCAM stores a respective address or address prefix (col 6, lines 61-65. The CAM is a lookup table and it would have been obvious to a person of ordinary skill in the art to associate a lookup table with plurality of rows, each row storing MAC destination addresses, VCC and VLAN ID to facilitate the lookup process).

Regarding Claim 18, Varghese et al. discloses all the limitations of claim 17 except wherein the FIB includes one or more content addressable memories (CAMs) and/or ternary content addressable memories (TCAMs) programmed with a plurality of addresses or address prefixes. Chang discloses wherein a network processor stores LEC (LAN emulation client) up-link information which facilitates mapping of MAC addresses to VCCs (Virtual Channel Connections) information. This information is stored in a content addressable memory (CAM) (Fig. 2, element 58) coupled to a packet forwarding subsystem (Fig. 2, element 56 is equivalent to the FIB) within the network processor (col 3, line 65 to col 4, line 3; col 6, lines 58 - 65). At the time the invention was made it would have been obvious to a person of ordinary skill in the art to use CAM to store routing information as taught by Chang.in the system of Varghese et al. to facilitates the cut-through forwarding process (col 6, lines 58 – 60).

5. Claim 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varghese et al. (US 6560236) in view of Chang (US 6728249) and further in view of Muller et al. (US 5938736).

Regarding Claim 19, Varghese et al. and Chang discloses all the limitations of or greater than 128 bits. Muller et al. discloses at feast one CAM (Fig. 6 elements 610 and 620) and/or TCAM has a width that is equal to or greater than 128 bits (col 11, lines 51 — 53). At the time the invention was made it would have been obvious to a person of ordinary skill in the art to include this feature as taught by Muller et at. in the system of Chang to be able to perform search key formation associated with the CAM with an IP

version six (IP V6) class indicating the packet header is associated with an IP V6 packet (col 7, lines 6 -- 32).

Allowable Subject Matter

6. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 1 – 32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Lee whose telephone number is (571) 272-3131. The examiner can normally be reached on Monday through Friday from 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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ACL Oct 29, 2006

RICKY Q. NGO
SUPERVISORY PATENT EXAMINER